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How Have the Risk of Layoff and Earnings Losses of Laid-off Workers Evolved since the Late 1970s in Canada?

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. not available for any reference period
.. not available for a specific reference period
… not applicable
0 true zero or a value rounded to *0* (zero)
0^s value rounded to *0* (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p} preliminary
^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E} use with caution
F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

Table of contents

Abstract

This study examines how the risk of job loss and the short-term earnings losses of laid-off workers evolved between the late 1970s and the mid-2000s. In aggregate, Canadian workers were less likely to be permanently laid-off in 2005–2007 than in 1978–1980, two comparable points in the business cycle. Workers in industries other than manufacturing who were laid-off had smaller median short-term earnings losses in 2005–2007 than did their counterparts in the late 1970s. Men aged 25 or older who were laid-off in the manufacturing sector in 2005–2007 experienced larger short-term earnings losses than did their counterparts in the late 1970s. Women who were laid-off in the manufacturing sector in 2005–2007 experienced short-term earnings losses that were either no different or smaller than the losses experienced by their counterparts in the late 1970s. In contrast, short-term earnings losses increased substantially between 1998–2000 and 2005–2007 for both men and women laid-off in manufacturing. This substantial increase in earnings losses coincides with the sharp employment decline observed in manufacturing since 2004.

Keywords: worker displacement; layoffs; employment; job loss; earnings losses

Executive summary

In its 2009 report (Stiglitz, Sen, and Fitoussi 2009), the Commission on the Measurement of Economic Performance and Social Progress identified economic insecurity resulting from job loss as a key dimension of individuals' lives affecting their well-being. One of the Commission's recommendations was that statistical agencies should improve measures of quality of life, including measures of individuals' economic insecurity. This study contributes to this objective by providing the longest time series available to date in Canada on two dimensions of economic insecurity: the risk of permanent layoff and the earnings losses experienced in the year following layoff.

While the study provides time series of permanent layoff rates and short-term earnings losses from the late 1970s to 2007, it focuses on outcomes observed in 1978–1980 and 2005–2007, two periods of economic growth during which labour market conditions—as proxied by the unemployment rate of prime-aged men—were fairly similar.[1] In the aggregate, Canadian workers were less likely to be permanently laid-off in the mid-2000s than they were in the late 1970s. Within the manufacturing sector, men's risk of layoff changed little between the late 1970s and the mid-2000s, while women's risk of layoff fell by 2.5 percentage points. In industries other than manufacturing, men's risk of layoff declined by 2.4 percentage points, while women's risk of layoff declined by 0.4 percentage points.

Across the labour force, the share of men who were re-employed in the year following layoff changed little between the late 1970s and the mid-2000s. In contrast, the share of women who were re-employed increased by 10 percentage points; increases were evident among those who lost a job in manufacturing or in industries other than manufacturing.

With respect to short-term earnings losses experienced by displaced workers, including workers who were not re-employed in the year following layoff, different trends were evident among those who lost a job in manufacturing and those who lost a job in all other industries. Median earnings losses of men laid-off from jobs in manufacturing increased by about 6 percentage points between 1979–1980 and 2005–2007. In contrast, median earnings losses of their female counterparts changed little, largely because of increases in post-displacement re-employment rates over the period.

In contrast, workers laid-off from jobs in industries other than manufacturing experienced smaller median earnings losses in 2005–2007 than in the late 1970s. The median earnings losses of displaced men were 8-percentage-points smaller in the mid-2000s than in the late 1970s, while the median earnings losses of displaced women were 18-percentage-points smaller. The improvement observed for women reflects increases in post-displacement re-employment rates between the periods and the smaller earnings losses experienced by those who found re-employment.

In sum, the study compares the risk of layoff and associated losses during two periods of economic growth separated by almost 30 years. Evidence suggests that, for many groups of workers, particularly those in industries other than manufacturing, economic insecurity resulting from job loss was lower in the mid-2000s than it was in the late 1970s.

However, the study also documents a substantial increase in the short-term earnings losses experienced by workers laid-off from manufacturing firms over the last decade. Between 1998–2000 and 2005–2007, the median short-term earnings losses experienced by men displaced

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1. In a related paper (Chan, Morissette, and Frenette, 2011), the layoff rates, re-employment rates, and short-term earnings losses experienced by workers laid-off during the recessions of the early 1980s, the early 1990s, and the late 2000s are compared.

from manufacturing (including those who were not re-employed in the year following layoff) increased by about 12 percentage points. The corresponding increase for women displaced from manufacturing amounts to roughly 18 percentage points. This substantial increase in earnings losses coincides with the sharp employment decline observed in manufacturing since 2004.

Several limitations of this study must be noted. Most of the results are average effects and thus do not rule out the possibility that, in certain regions, cities, age groups, education levels, industries, and/or occupations, workers may have experienced an increased risk of job loss and/or increasing earnings losses. Furthermore, the multivariate analyses conducted do not control for workers' educational attainment. Since Canadian workers are better educated now than they were in the late 1970s, and since post-displacement employment rates generally increase with education, the results are consistent with the possibility that, within cells defined jointly by age and education, post-displacement employment rates may have fallen for some groups of men and may have risen to a lesser extent than is observed in the raw data for some groups of women. Finally, given data limitations, trends in the financial consequences of job loss were documented only for short-term earnings losses. Different results might emerge if long-term losses were to be considered.

1   Introduction

In its 2009 report (Stiglitz, Sen, and Fitoussi 2009), the Commission on the Measurement of Economic Performance and Social Progress[2] identified economic insecurity resulting from job loss as a key dimension of individuals' lives affecting their well-being. One of the Commission's recommendations was that statistical agencies should improve measures of quality of life, including measures of individuals' economic insecurity:

> "Quality of life [...] depends on people's objective conditions and opportunities. Steps should be taken to improve measures of people's health, education, personal activities, political voice, social connections, environmental conditions and insecurity." (Stiglitz, Sen, and Fitoussi 2009, p. 58)

This paper contributes to the measurement of economic insecurity resulting from job loss—or job (in)security—by analyzing two of its dimensions: the risk of job loss and the earnings losses that workers experience shortly after being laid-off. Using Statistics Canada's Longitudinal Worker File (LWF) and Labour Force Survey (LFS), the study provides the longest time series available to date in Canada on these two aspects of job displacement.

A priori, arguments can be made for either increasing or decreasing levels of insecurity associated with job loss over the last three decades. On the one hand, faced with growing domestic and foreign competition, firms may adjust employment levels in response to business conditions more quickly now than they did in the past, thereby increasing the risk of layoff among employees. As well, given the aging of the labour force, workers laid-off in more recent years are older than their counterparts in the 1970s. The consequences of layoff may thus be more severe, since high-seniority and older displaced workers experience higher-than-average earnings losses (Jacobson, Lalonde, and Sullivan 1993; Stevens 1997; Morissette, Zhang, and Frenette 2007; Hijzen, Upward, and Wright 2010; Couch and Placzek 2010).

On the other hand, other factors may have reduced economic insecurity resulting from job loss. On average, Canadian workers are better educated now than they were thirty years ago. Since highly-educated workers generally have higher post-displacement employment rates than other workers (Farber 2005; Riddell and Song 2009), the growth in employees' education levels may have reduced the earnings losses experienced after layoff. There is also evidence that the expansionary period from the mid-1990s to 2008 was characterized by declining volatility on several measures. For instance, Davis (2008) analyzed weekly new claims for Employment Insurance benefits over the 1967–2007 period and showed that, on the basis of this metric, the incidence of job loss in the United States was lower in 2004–2007 than in any earlier period.[3] Since the economies of Canada and the United States are highly integrated, it is conceivable that the risk of job loss also has dropped in Canada over the last decades.

The question of whether economic insecurity resulting from layoff has increased or decreased over the last three decades has important implications for the well-being of Canadian workers and their families. Changing risk of layoff has potential implications for workers' preferences and demands for training and education, workers' financial preparedness for retirement, and family earnings instability (and, consequently, consumption and savings patterns). Similarly, changes in earnings following layoff may affect families' consumption paths as well as workers' incentives for upgrading their skills.

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2. Chaired by Joseph Stiglitz and initiated in February 2008 by the President of the French Republic, Nicolas Sarkozy.
3. Davis (2008) found that various data sets (based on household surveys, establishment surveys, and administrative records) yield the same conclusion; i.e., they show a long-term decline in the risk of job loss in the United States.

To date, no Canadian study has provided estimates of layoff rates and short-term earnings losses for the whole workforce over a period spanning the last three decades. Using data from Statistics Canada's LWF over the 1978–1993 period, Picot, Lin, and Pyper (1998) found that permanent layoff rates in the late 1980s and the early 1990s were fairly similar to those at comparable points in the business cycle in the late 1970s and early 1980s. Morissette (2004) used the LWF with respect to the 1983–1999 period and found little evidence that Canadian workers' likelihood of permanent layoff increased between the 1980s and the 1990s. Chen and Morissette (2010) used the LWF to document the post-displacement employment patterns observed between 1979 and 2004 for displaced workers aged 50 to 54. They found that, while earnings losses of men displaced from manufacturing in the first half of the 2000s were higher than those of comparable cohorts displaced during the 1980s, earnings losses of women displaced from non-manufacturing firms fell over time. Using data from the Survey of Labour and Income Dynamics (SLID), Bernard and Galarneau (2010) showed that layoff rates fell between 1993 and 2007.[4] Brochu and Zhou (2009), basing their analysis on worker perception data from Gallup surveys, concluded that perceived job insecurity did not rise between the late 1970s and the mid-2000s. Finally, Gray and Finnie (2009) used data from the Longitudinal Administrative Databank (LAD) to document the income trajectories of laid-off workers aged 41 to 64 during the 1990s and the early 2000s.

This study documents layoff rates for the entire workforce over the 1978–2007 period, thereby providing more comprehensive estimates over a longer time span than were previously available. Furthermore, this study provides, for the first time in Canada, estimates of the short-term earnings losses experienced by laid-off workers over a 30-year period. Further to the Stiglitz report noted at the outset, the paper assesses whether permanent layoffs became a more or less prevalent source of economic insecurity in Canada over three decades.

While the study provides time series of permanent layoff rates and short-term earnings losses from the late 1970s to 2007, it focuses on outcomes observed in 1978–1980 and 2005–2007, two periods of economic growth during which labour market conditions—as proxied by the unemployment rate of prime-aged men—were fairly similar.[5] In a related paper (Chan, Morissette, and Frenette, 2011), the temporary and permanent layoff rates, re-employment rates, and short-term earnings losses experienced by workers laid-off during the recessions of the early 1980s, the early 1990s, and the late 2000s are compared. The study also provides comparisons between the late 1990s and the mid-2000s, a period during which economic conditions faced by manufacturing firms changed substantially.

This study documents five key findings. First, Canadian workers were generally less likely to be laid-off from their jobs in 2005–2007 than they were in 1978–1980. Second, those who were laid-off from a job in industries other than manufacturing experienced smaller short-term earnings losses in 2005–2007 than did their counterparts in the late 1970s. Third, men aged 25 or older who were laid-off in the manufacturing sector in 2005–2007 experienced larger short-term earnings losses than did their counterparts in the late 1970s. Fourth, women who were laid-off in the manufacturing sector in 2005–2007 experienced short-term earnings losses that were either smaller than or fairly similar to the losses experienced by their counterparts in the late 1970s. Fifth, short-term earnings losses increased substantially between 1998–2000 and 2005–2007 for both men and women laid-off in manufacturing. This substantial increase in earnings losses coincides with the sharp employment decline observed in manufacturing since 2004. Together, the first two findings suggest that, for many groups of workers, economic insecurity resulting from job loss was lower in the mid-2000s than in the late 1970s.

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4. Leung and Cao (2009) found that rates of job destruction fell in Canada between 1992 and 2006. This is consistent with the findings of Bernard and Galarneau (2010).

5. While most of the discussions focus on comparisons between the late 1970s and 2005–2007, all multivariate analyses include a full set of period effects, thereby capturing outcomes observed during the late 1980s, among other periods.

This study is organized as follows. Section 2 briefly describes the data used in the study. Section 3 examines how the risk of permanent layoff evolved between 1978 and 2007. Section 4 documents the evolution of post-layoff employment rates, defined as the proportion of displaced workers who find paid employment in the year following layoff. Section 5 quantifies the short-term earnings losses experienced by laid-off workers. Concluding remarks follow in Section 6.

2   Background

Analyzing the evolution of the risk of job loss and of short-term earnings losses requires comparing periods having similar labour market conditions. Using the unemployment rate of men aged 25 to 54 as a proxy for labour market tightness, Chart 1 shows that at least two pairs of expansionary periods have displayed comparable labour market conditions over the last three decades.[6]

Chart 1
Unemployment rate of men and women aged 25 to 54, 1976 to 2010
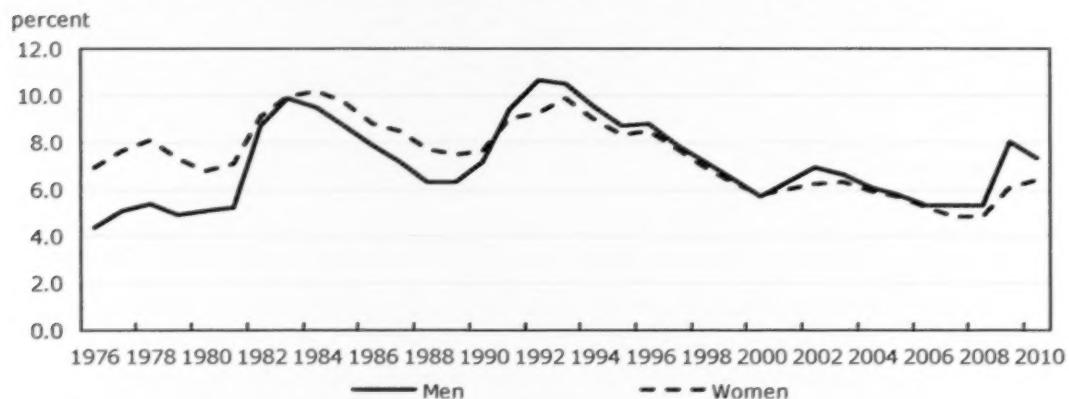
The first pair consists of the late 1980s (1987–1988) and the late 1990s (1998–1999), when the unemployment rate of prime-aged males averaged 6.8% and 6.9%, respectively. The second pair consists of the late 1970s (1978–1980) and the mid-2000s (2005–2007), when the unemployment rate for this group averaged 5.1% and 5.5%, respectively.[7] Since the focus of this paper is on long-term trends in economic insecurity resulting from layoff, comparisons will primarily be made between the late 1970s and the mid-2000s. Nonetheless, comparisons will also sometimes be made between the late 1990s and the mid-2000s, a period of substantial changes in the economic environment faced by manufacturing firms. Furthermore, all years covering the 1978–2007 period will be used in the multivariate analyses that will underlie both comparisons.

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6. Chart 1 also plots the unemployment rate of women aged 25 to 54. Because it is conceivable that women's labour market attachment and job search intensity have changed over the last three decades (thereby affecting their inflow into unemployment and the duration of their unemployment spells), the evolution of their unemployment rate likely reflects shifts in both labour-demand and labour-supply behaviour. For this reason, the unemployment rate of women aged 25 to 54 is not used as a metric to assess labour market conditions.

7. The 2006–2008 period displayed labour market conditions similar to those of the late 1970s; the unemployment rate of men aged 25 to 54 averaged 5.4% in 2006–2008. Since the data currently allow the calculation of permanent layoff rates up to 2007, the comparisons performed in this paper will involve the periods 1978–1980 and 2005–2007, rather than 1978–1980 and 2006–2008.

To compute permanent layoff rates, both Statistics Canada's Longitudinal Worker File (LWF) and Labour Force Survey (LFS) are used.[8] A permanent layoff occurs when a worker does not return to his or her initial employer in the current year or in the year following the layoff. Post-layoff employment rates and earnings losses are computed using the LWF. As discussed in Subsection 7.2 of the Appendix, the LWF is an administrative data set that consists of a 10% random sample of Canadian workers.

The study also examines short-term earnings losses, i.e., those experienced by laid-off workers between *t-1* and *t+1*, the years preceding and following displacement, respectively. Analyzing short-term earnings losses allows an investigation of the evolution of the cost of job loss over the longest period possible, including the most recent years for which data are available. While earnings losses experienced five years after displacement, for example, could also be considered, data limitations would enable an analysis of this variable only to 2004 (since the LWF currently ends in 2009).

Throughout the paper, three samples of paid workers are considered: those aged 15 to 64; those aged 25 to 64; and those aged 25 to 54.[9] For each sample, statistics are presented at the aggregate level (i.e., for all industries taken together), for manufacturing, and for the rest of the economy. This disaggregation makes it possible to assess whether, following the sharp employment decline observed in manufacturing since 2004 (Bernard 2009), the risk of job loss and earnings losses in this sector evolved differently than it did elsewhere in the economy.[10] All analyses are conducted separately for men and women, thereby allowing differential changes in post-displacement employment rates across gender resulting from sex-specific movements in labour supply and job search intensity following job loss, among other factors.

3   The risk of job loss over the last three decades

To assess how the risk of job loss has evolved over the last three decades, permanent layoff rates are calculated over the 1978–2007 period. Both the 1978–1989 version and the 1983–2008 version of the Longitudinal Worker File are used, as explained in Subsection 7.3 of the Appendix. Permanent layoff rates are obtained by dividing the number of jobs ending in a permanent layoff in a given year (as measured from the LWF) by average annual paid employment (as measured from the LFS).[11]

Charts 2, 3 and 4 plot permanent layoff rates of men and women aged 25 to 54 over the 1978–2007 period. Chart 2 plots aggregate numbers while Charts 3 and 4 show layoff rates in manufacturing and in industries other than manufacturing. While all three charts clearly identify increases in layoffs during the 1981–1982 and 1990–1992 recessions, none provides evidence

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8. As mentioned below, the LFS is used to calculate the number of workers at risk of being permanently laid-off. The number of jobs ending with a permanent layoff is obtained from the LWF.
9. Focusing on workers aged 25 to 64 allows one to exclude most full-time students, while restricting attention to workers aged 25 to 54 allows one to exclude early retirees as well.
10. Finer industry classifications cannot be used throughout the 1978–2007 period since LWF industry codes are based on the Standard Industrial Classification, 1980, for years prior to 1991 and on the North American Industry Classification System of 2007 for years from 1991 onwards. Of all workers (aged: 25 to 54; 15 to 64; or 25 to 64) who were laid-off between 1978 and 2007, a very small fraction (0.8%) has missing industry codes in the LWF. While these workers are included in the multivariate analyses performed at the aggregate level, they are excluded from the industry-specific analyses.
11. LFS employment is used as a denominator for the following reason. Since the number of jobs observed in a given year in LWF is affected by worker turnover, increases (decreases) in quit rates that take place at constant employment levels and that imply an employment-to-employment transition (i.e., with no intervening non-employment spell) will increase (lower) the number of jobs observed in a given year in the LWF and thus will spuriously reduce (increase) permanent layoff rates. Using LFS employment as a denominator circumvents this problem.

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that permanent layoff rates have trended upwards since the late 1970s. In fact, all three suggest the opposite—that the risk of job loss fell between the late 1970s and the mid-2000s.

This apparent drop in permanent layoff rates could simply result from compositional changes in the workforce, as the Canadian workforce became older over this period and older workers are less likely to be laid-off than younger ones (Chart 5).

This hypothesis is tested in Table 1 by regressing group-level permanent layoff rates on a set of period effects while controlling for workers' age and region of residence.[12] Thirty-six groups, defined by the interaction of six age categories and six regions, are constructed for each of the 30 years covered by the 1978–2007 period.[13] The following model is then estimated:

$$LR_{art} = \theta_t + \beta_1 * D\_AGE_{art} + \beta_2 * D\_REGION_{art} + \varepsilon_{art} \qquad t = 1978, \ldots 2007 \qquad (1)$$

where a, r, and t denote age categories, regions of residence, and calendar years, respectively. LR_{art} is the permanent layoff rate in year t of workers of age category a living in region r. D_AGE_{art} and D_REGION_{art} are a set of dummy variables capturing workers' age categories and regions of residence.[14] ε_{art} is an error term. θ_t is a vector of binary indicators capturing period effects. The periods considered are the following: 1978–1980; 1981–1984; 1985–1987; 1988–1990; 1991–1994; 1995–1997; 1998–2000; 2001–2004; and 2005–2007 (1978–1980 being the omitted period).[15] Since the focus is on the degree to which the risk of layoff in recent years has differed from that in the late 1970s, the discussion focuses on comparisons between 2005–2007 and 1978–1980. Accordingly, parameter estimates for the 2005–2007 period effect—which summarize these comparisons—are presented in Table 1.

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12. The choice of group-level regressions (rather than worker-level regressions) is dictated by the use of LFS employment as a denominator in the calculation of permanent layoff rates. Controls for workers' education level or occupation are not included since the LWF contains no information on these variables. Likewise, controls for workers' industry of employment are not included, since industrial classifications changed after 1990, thereby making detailed industry comparisons problematic.

13. The six age categories are the following: 25–29; 30–34; 35–39; 40–44; 45–49; and 50–54. The six regions are the following: the Atlantic provinces; Quebec; Ontario; Manitoba and Saskatchewan; Alberta; and British Columbia.

14. The omitted age category is 35–39, and the omitted region is Ontario.

15. Equation (1) is estimated by means of weighted least-squares, where each of the 36 groups is weighted by its share of total paid employment in a given year.

Chart 2
Permanent layoff rates, workers aged 25 to 54, 1978 to 2007 — All industries
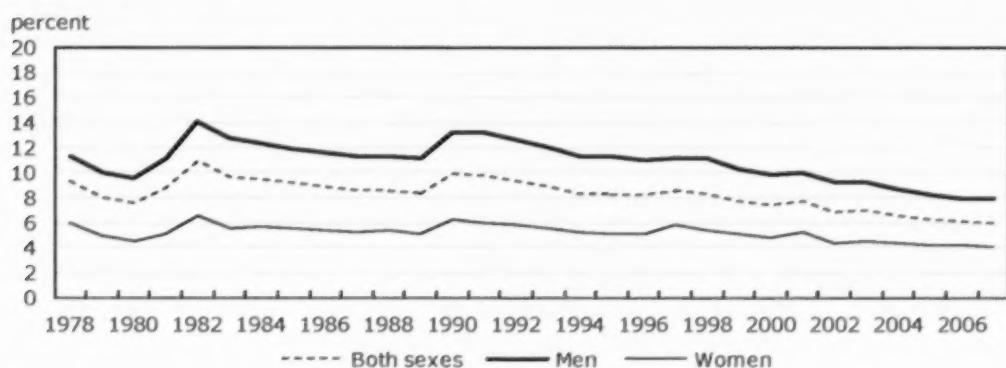
percent

Sources: Authors' calculations from the Longitudinal Worker File and the Labour Force Survey.

Chart 3
Permanent layoff rates, workers aged 25 to 54, 1978 to 2007 — Manufacturing
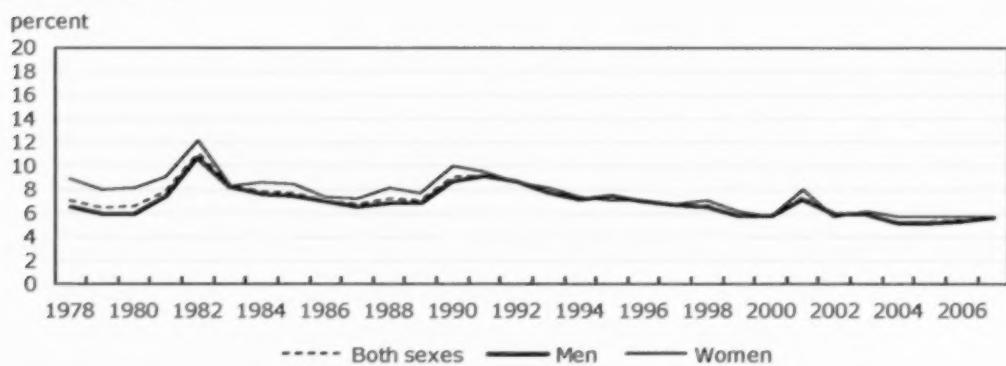
percent

Sources: Authors' calculations from the Longitudinal Worker File and the Labour Force Survey.

Chart 4
Permanent layoff rates, workers aged 25 to 54, 1978 to 2007 — Non-manufacturing
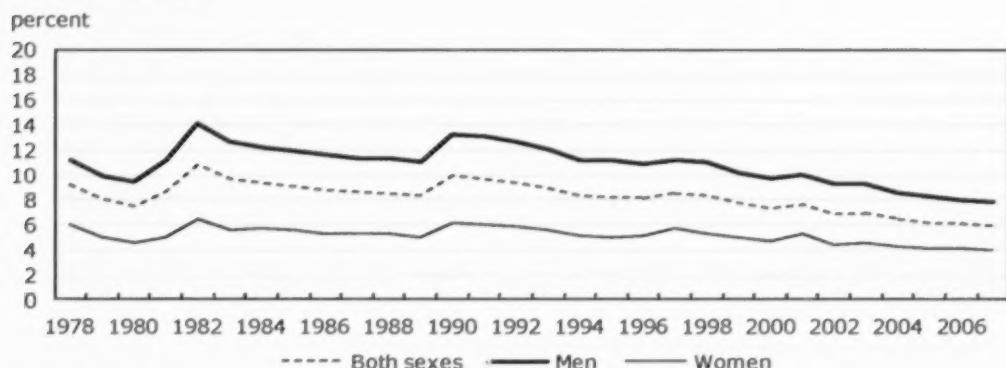
percent

Sources: Authors' calculations from the Longitudinal Worker File and the Labour Force Survey.

Chart 5
Permanent layoff rates by age, 1978 to 2007

Sources: Authors' calculations from the Longitudinal Worker File and the Labour Force Survey.

Table 1
Risk of job loss, 2005-to-2007 versus 1978-to-1980, workers aged 25 to 54

|	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Panel 1: All industries						
Coefficient	-0.021600 **	-0.017100 **	-0.022000 **	-0.016400 **	-0.010200 **	-0.007270 **
Standard error	0.003450	0.002020	0.004240	0.002600	0.002540	0.001530
Panel 2: Manufacturing						
Coefficient	-0.012600 **	-0.008810 **	-0.007900 *	-0.003760	-0.026600 **	-0.024800 **
Standard error	0.003440	0.002300	0.003560	0.002440	0.003800	0.002670
Panel 3: Non-manufacturing						
Coefficient	-0.025300 **	-0.020400 **	-0.030100 **	-0.023700 **	-0.006780 **	-0.003650 *
Standard error	0.003460	0.002130	0.004260	0.002840	0.002520	0.001580
Diagnostic statistics						
Age groups	No	Yes	No	Yes	No	Yes
Regions	No	Yes	No	Yes	No	Yes
Number of observations	1,080	1,080	1,080	1,080	1,080	1,080

† p<0.10, * p<0.05, ** p<0.01 (two-tailed test)
Notes: The table reads as follows: with controls for age and region, the likelihood of job loss for men employed in industries other than manufacturing was 2.37-percentage-points lower in 2005–2007 than in 1978–1980 (Column 4, Panel 3). The dependent variable is the permanent layoff rate in a given age-region-year cell. Apart from a vector of period effects, control variables include six age categories (age 35–39 being the omitted category) and six region indicators (Ontario being the omitted region). The period covered is 1978–2007. The sample consists of paid workers aged 25 to 54. Standard errors are robust. The numbers reported in this table show the parameter estimates for the 2005–2007 period effects.
Source: Authors' calculation from the Longitudinal Worker File.

The first column in Table 1 shows results of group-level regressions of permanent layoff rates on period effects only. Panel 1 indicates that permanent layoff rates for workers aged 25 to 54 were, on average, 2.2-percentage-points lower in 2005–2007 than during the 1978–1980 period. Column 2 adds controls for workers' age and region, and indicates that almost one-fourth of this difference can be accounted for by the aging of the workforce and changes in the regional distribution of employment: the risk of job loss for workers of a given age category and a given region was, on average, 1.7-percentage-points lower in 2005–2007 than in 1978–1980. Columns 3 to 6 show that similar qualitative conclusions hold when Equation (1) is estimated separately for men and women.

These aggregate results are consistent with Davis (2008); that is, they support the notion that the risk of job loss in North America was generally lower in the mid-2000s than in previous expansionary periods. Since manufacturing employment fell substantially after 2004, it is worth investigating whether the aforementioned decrease in permanent layoff rates, found in the aggregate, is also observed in manufacturing.

This is done in the second panel of Table 1. Overall, permanent layoff rates in manufacturing were slightly lower in 2005–2007 than in 1978–1980, whether or not controls for age and region were applied (columns 1 and 2). Separate analyses for men and women that include these controls show that men's rate of permanent layoff changed little between the late 1970s and the mid-2000s (column 4), while the women's rate fell by 2.5 percentage points (column 6).[16]

The third panel of Table 1 shows that, whether or not one controls for age and region, permanent layoff rates in industries other than manufacturing were lower in the mid-2000s than in the late 1970s. All else equal, men experienced a 2.4-percentage-point decline in their likelihood of permanent layoff while women saw their likelihood decline marginally (by 0.4 percentage points).

Together, these results indicate that Canadian workers were generally less likely to lose their jobs in the mid-2000s than during the late 1970s. This conclusion holds when the analysis is restricted to workers aged 15 to 64 or workers aged 25 to 64 (Tables 5 and 6 in the Appendix).[17]

4   Employment rates following job loss

While the risk of job loss is one key component of job security, economic outcomes following job loss are equally important. One of these outcomes is the extent to which laid-off workers are able to find paid employment shortly after displacement. This section examines what proportion of laid-off employees find paid employment in the year following job loss and, more importantly, how this proportion has changed over the last three decades.

Of all employees aged 25 to 54 who were permanently laid-off in the late 1970s, just over 80% were employed again as paid workers during the year following displacement (Charts 6, 7 and 8). As expected, post-layoff employment rates fell during recessionary years, but rose through the mid- to late 1990s and remained fairly stable thereafter. The net result was that, during the 2005–2007 period, workers' chances of having a job one year after layoff were, at the aggregate level, much the same as they were in the late 1970s.

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16. Given that manufacturing employment fell sharply after 2004, the fact that permanent layoff rates in manufacturing did not rise after 2004 may come as a surprise. The puzzle can be resolved by keeping in mind that firms may reduce labour demand through reduced hiring and increased attrition as well as by laying off workers. Data from the LWF confirm that hiring rates fell sharply in manufacturing after 2004. Among workers aged 25 to 54, they amounted to roughly 14% in 2005–2007, compared to about 22% in 1998–2000.
17. Since the results shown in Table 1 are average effects, they do not rule out the possibility that, in certain regions, cities, age groups, education levels, industries, and/or occupations, workers may have experienced an increasing risk of job loss. This point is made again in the conclusion.

Chart 6
Post-displacement paid-employment rates, laid-off workers aged 25 to 54, 1978 to 2007 — All industries

percent

Chart 7
Post-displacement paid-employment rates, laid-off workers aged 25 to 54, 1978 to 2007 — Manufacturing

percent

Chart 8
Post-displacement paid-employment rates, laid-off workers aged 25 to 54, 1978 to 2007 — Non-manufacturing

percent
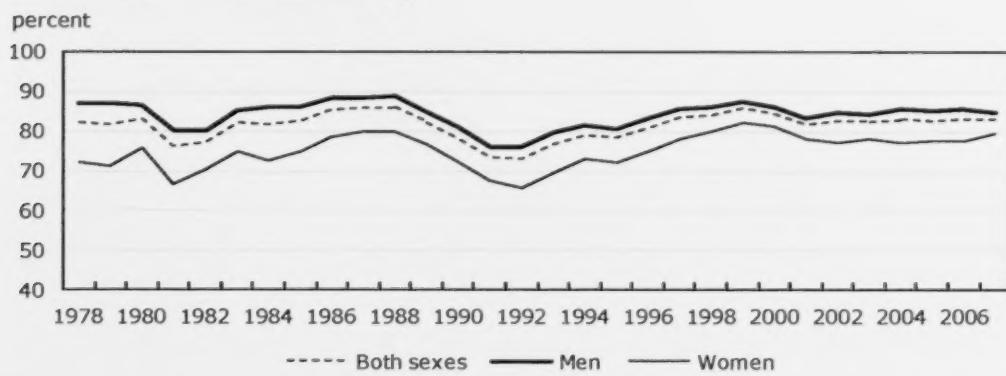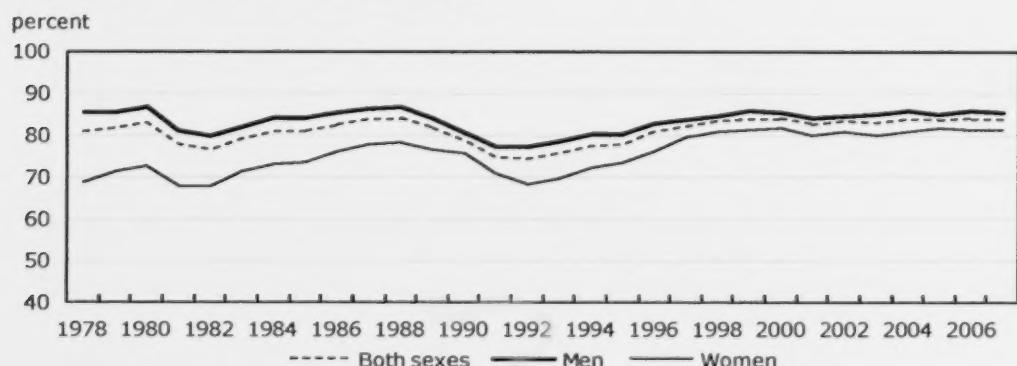
However, aggregate re-employment rates mask important gender differences. Among workers laid-off from jobs in manufacturing and jobs in industries other than manufacturing, the post-displacement employment rate of women was markedly higher in the mid-2000s than it was in the late 1970s, while such was not the case for men.

These changes are assessed more formally in Table 2, by means of the following linear probability model:

$$E_{it} = \theta_t + \beta_1 * D\_AGE_{it} + \beta_2 * D\_PROVINCE_{it} + \varepsilon_{it} \qquad t = 1978, ...2007 \qquad (2)$$

where E_{it} equals 1 if worker i, who was permanently laid-off in year t, found paid employment (as measured by the presence of T4 earnings) in year $t+1$, and equals 0 if worker i did not find paid employment in year $t+1$. D_AGE_{it} and $D\_PROVINCE_{it}$ are a set of binary indicators capturing workers' age category and province of residence.[18] Thanks to the large sample size of the LWF, age categories based on single years of age are used, thereby leading to the inclusion of 29 age dummies when one estimates Equation (2) for workers aged 25 to 54 (age 30 being the omitted age category). Once again, θ_t is a vector of binary indicators capturing period effects.

Table 2
Post-displacement paid-employment rates, 2005-to-2007 versus 1978-to-1980, workers aged 25 to 54

	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Panel 1: All industries						
Coefficient	0.016900 **	0.022500 **	-0.006930 **	-0.001780	0.096700 **	0.104000 **
Standard error	0.001550	0.001560	0.001730	0.001740	0.003210	0.003210
Panel 2: Manufacturing						
Coefficient	0.005210	0.013200 **	-0.018500 **	-0.010400 **	0.053100 **	0.056900 **
Standard error	0.003590	0.003610	0.003980	0.004000	0.007240	0.007270
Panel 3: Non-manufacturing						
Coefficient	0.019200 **	0.024300 **	-0.004580 *	-0.000137	0.107000 **	0.115000 **
Standard error	0.001720	0.001730	0.001920	0.001930	0.003660	0.003660
Diagnostic statistics						
Number of observations						
Panel 1: All industries	1,570,083	1,570,083	1,064,174	1,064,174	505,909	505,909
Panel 2: Manufacturing	279,798	279,798	194,682	194,682	85,116	85,116
Panel 3: Non-manufacturing	1,277,802	1,277,802	861,395	861,395	416,407	416,407
Age dummies	No	Yes	No	Yes	No	Yes
Provinces	No	Yes	No	Yes	No	Yes

† p<0.10, * p<0.05, ** p<0.01 (two-tailed test)
Notes: The table reads as follows: with controls for age and province, post-displacement paid-employment rates of males laid-off from manufacturing fell by 1.04 percentage points between 1978–1980 and 2005–2007 (Column 4, Panel 2). The dependent variable equals 1 if a laid-off worker has positive T4 earnings in year *t+1*, the year following the layoff; the dependent variable equals 0 otherwise. Apart from a vector of period effects, control variables include dummy variables for single years of age (30 being the omitted age) and province indicators (Ontario being the omitted province). The period covered is 1978–2007. Results are from a linear probability model. The numbers show the parameter estimates for the 2005–2007 period effects. Standard errors are robust.
Source: Authors' calculation from the Longitudinal Worker File.

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18. Ontario is the omitted province.

The first panel of Table 2 shows that employment rates in the year following job loss were marginally higher (1.7 percentage points) in the mid-2000s than they were during the late 1970s (column 1). A larger improvement over time (2.3 percentage points) is found once controls for age and province of residence are included (column 2). This larger improvement is expected, since post-displacement employment rates tend to fall with age (Chart 9) and since workers laid-off in recent years were older than their counterparts in the late 1970s.[19] All else equal, laid-off men experienced little change in their employment rates while their female counterparts saw their chances of finding a job one year after displacement increase by 10 percentage points (columns 4 and 6).

This sharp increase in women's post-layoff employment rates is found in both manufacturing and industries other than manufacturing. With controls for age and province of residence, women laid-off from manufacturing jobs were 5.7-percentage-points more likely to be employed in the year following job loss in 2005–2007 than in 1978–1980, while the figure for women laid-off from jobs in industries other than manufacturing was 11.5 percentage points.

The story is different for men. All else equal, men laid-off from manufacturing jobs experienced a slight decrease in re-employment rates (1.0 percentage point) while their counterparts in industries other than manufacturing saw virtually no change in their likelihood of being re-employed in the following year.[20]

Chart 9
Post-displacement paid-employment rates by age, 1978 to 2007
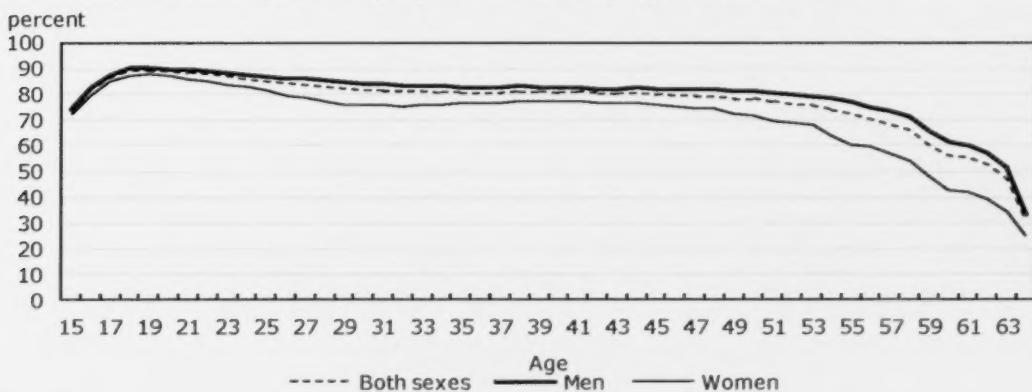
Source: Authors' calculations from the Longitudinal Worker File.

In sum, paid-employment rates one year after permanent layoff increased markedly for women and changed little for men. These patterns hold for workers aged 15 to 64 and for workers aged 25 to 64 (Tables 7 and 8 in the Appendix). They also hold for all three samples used in this paper (workers aged 15 to 64, workers aged 25 to 64, and workers aged 25 to 54) when the restriction that laid-off workers have positive earnings in the year preceding the layoff is added. In the next section, this additional restriction is imposed in order to quantify the earnings losses

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19. Note that: *a)* the average age of workers who were laid-off in the late 1970s is 31, compared to 37 in 2005–2007; and *b)* the numbers plotted in Chart 9 are averages across the period 1978–2007 and thus capture age-employment profiles from the late 1970s as well as from more recent years.

20. While a thorough investigation of the different trends in employment rates observed for men and women is beyond the scope of this paper, the increase in women's post-layoff employment rates may have been driven in part by changes in women's labour market attachment and job search intensity following job loss. These two factors cannot be measured by the data used in this study.

experienced between year *t-1* and year *t+1* by workers who were permanently laid-off in year *t*.[21]

5 Short-term earnings losses

The analysis initially focuses on the most successful displaced workers, those who found paid employment in the year following the layoff. Subsequently, laid-off workers who had no earnings in the year following displacement are added to the sample.[22]

5.1 Displaced workers with positive earnings in year *t-1* and year *t+1*

Charts 10, 11 and 12 plots the average change in log real earnings (between year *t-1* and year *t+1*) experienced by workers who were laid-off between 1979 and 2007 and who found paid employment in the following year.[23] As expected, short-term earnings losses (measured as average change in log earnings) were larger during recessions and smaller during periods of recovery. Abstracting these cyclical variations, short-term earnings losses trended neither upwards nor downwards over the period. More specifically, earnings losses experienced in the mid-2000s appear—at the aggregate level—to be no higher than those experienced in the late 1970s.

A different pattern is observed in manufacturing than in the rest of the economy. In the mid-2000s, men and women laid-off from jobs in the manufacturing sector appear to have experienced larger earnings losses than their counterparts laid-off from manufacturing jobs in the late 1970s. This pattern was not evident in industries other than manufacturing, where laid-off workers experienced fairly similar losses in 1979–1980 and 2005–2007. Since earnings losses of displaced workers increase with age (Chart 13), comparisons over time require controls for workers' age—and for other factors—as is done in Equation (3):

$$Y_{it} = \theta_t + \beta_1 * D\ AGE_{it} + \beta_2 * D\ PROVINCE_{it} + \varepsilon_{it} \qquad t = 1979,\ ...2007 \qquad (3)$$

where Y_{it} equals log earnings in the year following the layoff minus log earnings in the year preceding it. Other variables are defined in the same way as in Equation (2).[24]

The first panel of Table 3 indicates that, across the entire workforce, short-term earnings losses experienced by laid-off workers aged 25 to 54 were, on average, 6.5-percentage-points (0.063 log points) smaller in 2005–2007 than in 1979–1980 (column 1).[25] After controls for age and province of residence were applied (column 2), earnings losses were 9-percentage-points smaller (0.087 log points). This pattern was evident among both men and women (columns 4 and 6).

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21. Of all workers laid-off in year *t*, the vast majority (89.5%) had positive wages and salaries in year *t -1*, the year preceding layoffs.
22. Of all workers who lost their jobs in year *t* and had positive earnings in year *t-1* at any time during the 1979–2007 period, an average of 82.4% had positive earnings in year *t+1*, the year following displacement.
23. Cohorts displaced since 1979 are examined because the LWF starts in 1978 and because data for 1978 are needed in order to compute earnings losses of workers displaced in 1979.
24. The omitted period is now 1979–1980 rather than 1978–1980.
25. The magnitude of the decline equals the antilog of -0.063 minus 1.0.

Chart 10
Average change in log earnings, laid-off workers aged 25 to 54,
1979 to 2007 — All industries
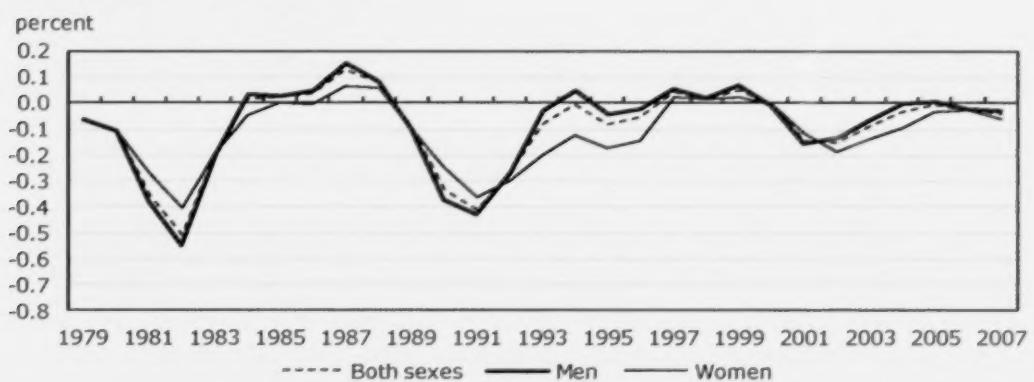
Note: Workers with positive wages and salaries in year *t-1* and year *t+1*, the years preceding and following layoffs.
Source: Authors' calculations from the Longitudinal Worker File.

Chart 11
Average change in log earnings, laid-off workers aged 25 to 54,
1979 to 2007 — Manufacturing
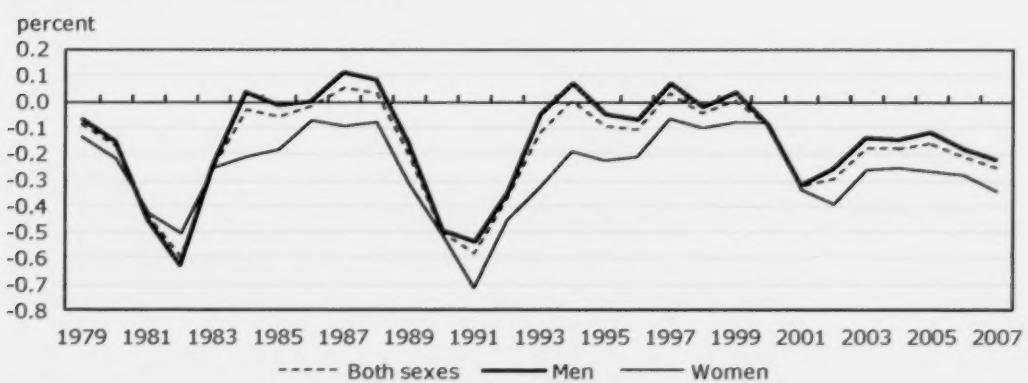
Note: Workers with positive wages and salaries in year *t-1* and year *t+1*, the years preceding and following layoffs.
Source: Authors' calculations from the Longitudinal Worker File.

Chart 12
Average change in log earnings, laid-off workers aged 25 to 54, 1979 to 2007 — Non-manufacturing
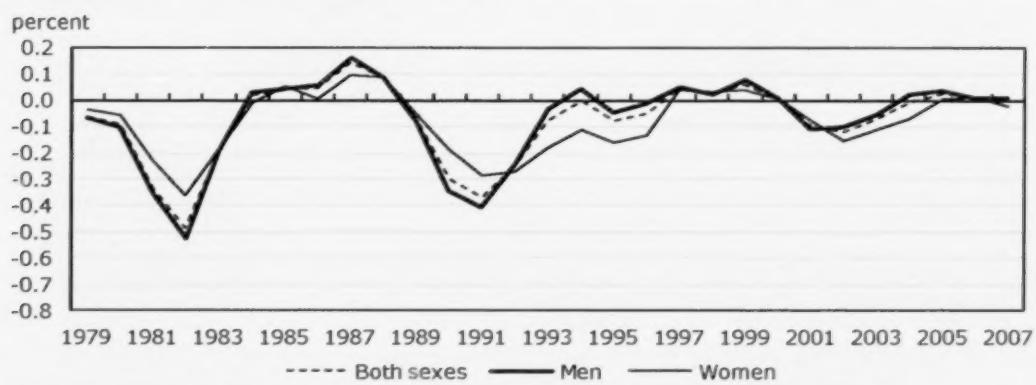
percent

----- Both sexes   ———— Men   ———— Women

Note: Workers with positive wages and salaries in year *t-1* and year *t+1*, the years preceding and following layoffs.
Source: Authors' calculations from the Longitudinal Worker File.

Chart 13
Average change in (log) earnings, by age, 1979 to 2007
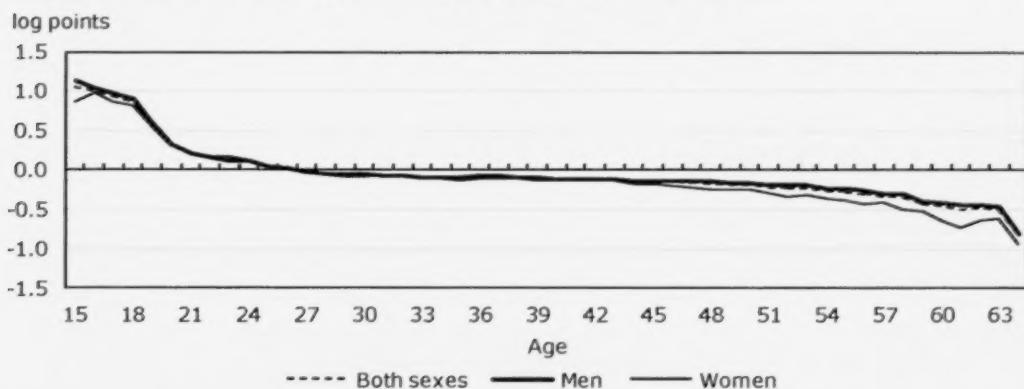
log points

Age

----- Both sexes   ———— Men   ———— Women

Note: Workers with positive wages and salaries in year *t-1* and year *t+1*, the years preceding and following layoffs.
Source: Authors' calculations from the Longitudinal Worker File.

For the manufacturing sector, the short-term earnings losses of laid-off men were 6-percentage-points higher in 2005–2007 than in 1979–1980 (Table 3, column 3). When age and province were taken into account (column 4), earnings losses were 3-percentage-points higher in 2005–2007, but this difference is not statistically significant at conventional levels. Among women laid-off from jobs in the manufacturing sector, short-term earnings losses were 11-percentage-points higher in 2005–2007 than in 1979–1980 and 8-percentage-points higher when controls for age and province were added (columns 3 and 4).

Table 3
Earnings losses of laid-off workers (aged 25 to 54) re-employed in year *t+1*, 2005-to-2007 versus 1979-to-1980

Variables	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Panel 1: All industries						
Coefficient	0.062800 **	0.087100 **	0.072700 **	0.094500 **	0.042500 **	0.074000 **
Standard error	0.006210	0.006210	0.006900	0.006900	0.014100	0.014100
Panel 2: Manufacturing						
Coefficient	-0.077800 **	-0.041000 **	-0.060900 **	-0.026000	-0.117000 **	-0.085400 **
Standard error	0.014500	0.014500	0.016300	0.016300	0.030300	0.030300
Panel 3: Non-manufacturing						
Coefficient	0.087200 **	0.109000 **	0.101000 **	0.120000 **	0.048500 **	0.080600 **
Standard error	0.006900	0.006910	0.007650	0.007650	0.016200	0.016300
Diagnostic statistics						
Number of observations						
Panel 1: All industries	1,158,050	1,158,050	810,614	810,614	347,436	347,436
Panel 2: Manufacturing	206,871	206,871	150,077	150,077	56,794	56,794
Panel 3: Non-manufacturing	942,848	942,848	654,993	654,993	287,855	287,855
Age dummies	No	Yes	No	Yes	No	Yes
Provinces	No	Yes	No	Yes	No	Yes

† $p<0.10$, * $p<0.05$, ** $p<0.01$ (two-tailed test)
Notes: The table reads as follows: with controls for age and province, earnings losses of women laid-off in industries other than manufacturing and re-employed in the following year fell, on average, by 0.0806 log points between 1979–1980 and 2005–2007 (Column 6, Panel 3). The dependent variable equals log earnings in year *t+1*, the year following the layoff, minus log earnings in year *t-1*. Apart from a vector of period effects, control variables include dummy variables for single years of age (30 being the omitted age) and province indicators (Ontario being the omitted province). The period covered is 1979–2007. Results are from ordinary least-squares. The numbers show the parameter estimates for the 2005–2007 period effects. Standard errors are robust.
Source: Authors' calculation from the Longitudinal Worker File.

Among workers who were laid-off from jobs outside the manufacturing sector, men and women who were re-employed in the following year experienced smaller short-term earnings losses in 2005–2007 than did their counterparts in 1979–1980, regardless of whether or not controls for age and province were included.

Overall, Canadian workers who were laid-off from jobs in industries other than manufacturing had smaller short-term earnings losses in the mid-2000s than did their counterparts in the late 1970s, while workers laid-off from manufacturing jobs in the mid-2000s had larger losses than did their counterparts in the late 1970s.[26]

While the comparisons made so far involved the late 1970s and the mid-2000s, it is important to note that earnings losses of displaced manufacturing workers increased substantially between the late 1990s and the mid-2000s. Between 1998–2000 and 2005–2007—two periods with fairly similar aggregate labour market conditions—the short-term earnings losses experienced by men displaced from manufacturing increased by 14 percentage points (0.15 log points) (Chart 11). The corresponding increase for women displaced from manufacturing amounts to 19 percentage points (0.21 log points). Regression analyses performed in Table 3 show that after controlling for age and province, the short-term earnings losses experienced by men displaced from manufacturing increased by 12 percentage points (0.13 log points) while the short-term earnings losses experienced by women displaced from manufacturing increased by

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26. This conclusion holds for workers aged 25 to 64 but not for those aged 15 to 64. In the latter sample, no deterioration in earnings losses is observed in manufacturing once controls for age and province are used (Tables 9 and 10 in the Appendix).

17 percentage points (0.18 log points). This substantial increase in earnings losses coincides with the sharp employment decline observed in manufacturing since 2004.

5.2 Inclusion of displaced workers with no earnings in year *t+1*

The trends in short-term earnings losses documented above pertain to laid-off workers who were re-employed in the year following displacement. But what about those who were not re-employed? Changes in short-term earnings among all laid-off workers are affected by the proportion who find re-employment and by the earnings that re-employed workers receive. In this section, trends in short-term earnings losses are estimated for all laid-off workers, including those who did not have earnings in the year following job loss. Results are shown in Table 4, which presents median percentage changes in earnings between year *t-1* and year *t+1* for this broader sample.[27]

Table 4
Median percentage change in earnings of laid-off workers aged 25 to 54 (including those with no wages and salaries in year *t+1*), 2005-to-2007 versus 1979-to-1980

	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Part 1: All industries						
Coefficient	0.064000 **	0.085700 **	0.056000 **	0.071700 **	0.160000 **	0.202000 **
Standard error	0.004750	0.004790	0.005100	0.005240	0.011100	0.010800
Part 2: Manufacturing						
Coefficient	-0.051000 **	-0.020100 †	-0.057700 **	-0.027400 *	-0.013600	0.012500
Standard error	0.010300	0.010800	0.011500	0.011900	0.024600	0.022900
Part 3: Non-manufacturing						
Coefficient	0.084300 **	0.105000 **	0.079200 **	0.096000 **	0.178000 **	0.224000 **
Standard error	0.005160	0.005310	0.005530	0.005830	0.013200	0.012300
Diagnostic statistics						
Number of observations						
Part 1: All industries	1,405,555	1,405,555	958,494	958,494	447,061	447,061
Part 2: Manufacturing	252,020	252,020	177,408	177,408	74,612	74,612
Part 3: Non-manufacturing	1,143,192	1,143,192	774,342	774,342	368,850	368,850
Age dummies	No	Yes	No	Yes	No	Yes
Provinces	No	Yes	No	Yes	No	Yes

† p<0.10, * p<0.05, ** p<0.01 (two-tailed test)
Notes: The table reads as follows: with controls for age and province, median earnings losses of women laid-off in industries other than manufacturing, measured in terms of percentage changes, fell by 22.4 percentage points between 1979–1980 and 2005–2007. The dependent variable is the percentage change in earnings between year *t-1* and year *t+1*, the year following the layoff. Apart from a vector of period effects, control variables include dummy variables for single years of age (30 being the omitted age) and province indicators (Ontario being the omitted province). The period covered is 1979–2007. Results are from median regressions. The numbers show the parameter estimates for the 2005–2007 period effects. Standard errors are robust.
Source: Authors' calculation from the Longitudinal Worker File.

Workers laid-off in industries other than manufacturing experienced smaller median earnings losses in 2005–2007 than did their counterparts in the late 1970s, all else equal; this finding is consistent with results presented in section 5.1. The median earnings losses of displaced men

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27. Median percentage changes in earnings are used, since: *a)* changes in log earnings cannot be computed, as a result of the presence of zero earnings among workers not employed in year *t+1*; *b)* average percentage changes in earnings are highly sensitive to the large (100%) earnings losses incurred by these workers; and *c)* median (as well as average) changes in earnings are sensitive to scale effects, i.e., may increase for some groups (e.g., women) simply because of secular growth in pre-displacement earnings.

were 10-percentage-points smaller in the mid-2000s than in the late 1970s, while the median earnings losses of displaced women were 22-percentage-points smaller. The sharp improvement observed for women reflects the increases in their post-displacement employment rates over the period and the smaller earnings losses experienced by those re-employed in the mid-2000s.[28]

With respect to the manufacturing sector, evidence presented in Tables 2 and 3 showed that post-displacement employment rates of men changed little between the late 1970s and the mid-2000s, and that the earnings losses of those who found re-employment one year after layoff were generally larger in the mid-2000s than they were in the late 1970s. As a result, one would expect median earnings losses of all displaced male manufacturing workers to increase over the period. Such is indeed the case, as median earnings losses of men laid-off from manufacturing jobs increased by about 3 percentage points between 1979–1980 and 2005–2007 (Table 4, column 4). In contrast, median earnings losses of their female counterparts changed little, as improvements in the latter's post-layoff employment rates roughly offset larger earnings losses experienced by women who were re-employed (column 6).

In terms of broader age groups, multivariate analyses for the manufacturing sector that control for age and province suggest that median earnings losses increased by 4 percentage points between the late 1970s and the mid-2000s for men aged 25 to 64, but remained virtually unchanged among men aged 15 to 64 during this period. For displaced female manufacturing workers in these two age groups, median earnings losses fell by between 2 percentage points and 7 percentage points. While an assessment of the causes of the greater earnings losses observed for displaced manufacturing male workers aged 25 or over is beyond the scope of this paper, Chart 14 suggests that the greater difficulty they have experienced in recent years finding employment in manufacturing after job loss might be one explanation.[29]

Chart 14
Percentage of male manufacturing workers who found employment in manufacturing after job loss

percent
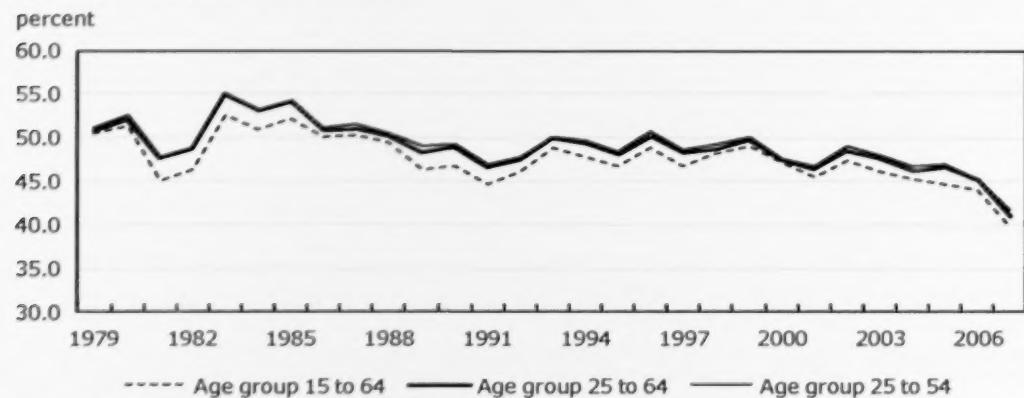
Source: Authors' calculations from the Longitudinal Worker File.

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28. The decline in the median earnings losses of workers displaced in industries other than manufacturing is also found among workers aged 15 to 64 and aged 25 to 64 (Tables 11 and 12 in the Appendix).
29. To help readers assess the evolution of earnings losses in manufacturing over the last decade, Table 13 in Subsection 7.4 of the Appendix shows the median percentage changes in earnings experienced by men and women aged 25 to 54 who were displaced from manufacturing in 1999–2000 and 2005–2007, two periods with fairly similar aggregate labour market conditions.

Overall the results indicate that, among observationally equivalent workers, median earnings losses: *a)* were substantially smaller in the mid-2000s than they were during the late 1970s for men and women displaced from industries other than manufacturing; *b)* were between 3-percentage-points and 4-percentage-points larger in 2005–2007 than in the late 1970s for men aged 25 or over displaced from manufacturing jobs; and *c)* changed little or fell for women displaced from manufacturing jobs.

As was the case in Section 5.1, short-term earnings losses of displaced manufacturing workers increased substantially between 1998–2000 and 2005–2007. The regression analyses underlying Table 4 indicate that after controlling for age and province of residence, median earnings losses of men and women laid-off from manufacturing increased by roughly 10 and 14 percentage points, respectively, between the late 1990s and the mid-2000s.

6 Summary and conclusion

This study examined how the risk of job loss and the short-term earnings losses of laid-off workers evolved between 1978 and 2007. The main findings can be summarized as follows:

a) In aggregate, Canadian workers were less likely to lose their jobs in the mid-2000s than during the late 1970s;
b) Those who were laid-off from non-manufacturing jobs had smaller median short-term earnings losses in the mid-2000s than during the late 1970s;
c) Men aged 25 or over who were laid-off from manufacturing jobs in the mid-2000s experienced larger short-term earnings losses than did their counterparts in the late 1970s. Women who were laid-off in the manufacturing sector in 2005–2007 experienced short-term earnings losses that were either no different or smaller than the losses experienced by their counterparts in the late 1970s;
d) Short-term earnings losses of manufacturing displaced workers increased more between the late 1990s and the mid-2000s—two periods with fairly similar aggregate labour market conditions—than they did between the late 1970s and the mid-2000s. This substantial increase in earnings losses coincides with the sharp employment decline observed in manufacturing since 2004.

Several limitations must be noted. First, most of the results presented in this paper are average effects and thus do not rule out the possibility that, in certain regions, cities, age groups, education levels, industries, and/or occupations, workers may have experienced an increasing risk of job loss and/or increasing earnings losses. Second, the multivariate analyses performed did not control for workers' educational attainment. Since Canadian workers are better educated now than they were in the late 1970s, and since post-displacement employment rates generally increase with education, the results are consistent with the possibility that, within cells defined jointly by age and education, post-displacement employment rates may have fallen for some groups of men and may have risen to a lesser extent than is observed in the raw data for some groups of women. Third, as a result of data limitations, trends in the financial consequences of job loss were documented only for short-term earnings losses. Different results might emerge were longer-term earnings losses considered. Finally, as more recent data become available, future research should assess how permanent layoff rates and short-term earnings losses in 2008–2010 compare with those observed during the recessions of the early 1980s and of the early 1990s.

7 Appendix

7.1 Results for workers aged 15 to 64 and 25 to 64

Table 5
Risk of job loss, 2005-to-2007 versus 1978-to-1980 — Workers aged 15 to 64

	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Panel 1: All industries						
Coefficient	-0.0318000 **	-0.024500 **	-0.034000 **	-0.026000 **	-0.019300 **	-0.012900 **
Standard error	0.0041400	0.002410	0.005120	0.003040	0.003250	0.001870
Panel 2: Manufacturing						
Coefficient	-0.0248000 **	-0.009390 **	-0.020500 **	-0.004990 †	-0.037100 **	-0.024700 **
Standard error	0.0050600	0.002490	0.005390	0.002740	0.004520	0.002670
Panel 3: Non-manufacturing						
Coefficient	-0.0346000 **	-0.027900 **	-0.041900 **	-0.034800 **	-0.015600 **	-0.009470 **
Standard error	0.0040000	0.002420	0.005040	0.003250	0.003200	0.001880
Diagnostic statistics						
Age groups	No	Yes	No	Yes	No	Yes
Regions	No	Yes	No	Yes	No	Yes
Number of observations	1,800	1,800	1,800	1,800	1,800	1,800

† $p<0.10$, * $p<0.05$, ** $p<0.01$ (two-tailed test)
Notes: The table reads as follows: with controls for age and region, the likelihood of job loss for men employed in industries other than manufacturing was 3.48-percentage-points lower in 2005–2007 than in 1978–1980. The dependent variable is the permanent layoff rate in a given age-region-year cell. Apart from a vector of period effects, control variables include ten age categories (age 35–39 being the omitted category) and six region indicators (Ontario being the omitted region). The period covered is 1978–2007. The sample consists of paid workers aged 15 to 64. Standard errors are robust. The numbers reported in this table show the parameter estimates for the 2005–2007 period effects.
Source: Authors' calculation from the Longitudinal Worker File.

Table 6
Risk of job loss, 2005-to-2007 versus 1978-to-1980 — Workers aged 25 to 64

	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Panel 1: All industries						
Coefficient	-0.018800 **	-0.014800 **	-0.017800 **	-0.012900 **	-0.008860 **	-0.006250 **
Standard error	0.003120	0.001830	0.003820	0.002330	0.002310	0.001400
Panel 2: Manufacturing						
Coefficient	-0.009340 **	-0.005980 **	-0.004790	-0.001210	-0.024100 **	-0.022500 **
Standard error	0.003120	0.002080	0.003190	0.002170	0.003560	0.002520
Panel 3: Non-manufacturing						
Coefficient	-0.022700 **	-0.018300 **	-0.025600 **	-0.019900 **	-0.005650 *	-0.002920 *
Standard error	0.003120	0.001920	0.003850	0.002550	0.002280	0.001430
Diagnostic statistics						
Age groups	No	Yes	No	Yes	No	Yes
Regions	No	Yes	No	Yes	No	Yes
Number of observations	1,440	1,440	1,440	1,440	1,440	1,440

† $p<0.10$, * $p<0.05$, ** $p<0.01$ (two-tailed test)
Notes: The table reads as follows: with controls for age and region, the likelihood of job loss for men employed in industries other than manufacturing was 1.99-percentage-points lower in 2005–2007 than in 1978–1980. The dependent variable is the permanent layoff rate in a given age-region-year cell. Apart from a vector of period effects, control variables include eight age categories (age 35–39 being the omitted category) and six region indicators (Ontario being the omitted region). The period covered is 1978–2007. The sample consists of paid workers aged 25 to 64. Standard errors are robust. The numbers reported in this table show the parameter estimates for the 2005–2007 period effects.
Source: Authors' calculation from the Longitudinal Worker File.

Table 7
Post-displacement paid-employment rates, 2005-to-2007 versus 1978-to-1980 — Workers aged 15 to 64

	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Panel 1: All industries						
Coefficient	0.002700 *	0.028300 **	-0.015000 **	0.005120 **	0.057400 **	0.101000 **
Standard error	0.001150	0.001150	0.001310	0.001310	0.002290	0.002260
Panel 2: Manufacturing						
Coefficient	-0.017000 **	0.017300 **	-0.035600 **	-0.006870 *	0.024200 **	0.068600 **
Standard error	0.002760	0.002750	0.003040	0.003030	0.005740	0.005730
Panel 3: Non-manufacturing						
Coefficient	0.006370 **	0.030100 **	-0.010400 **	0.007580 **	0.061500 **	0.105000 **
Standard error	0.001280	0.001280	0.001470	0.001460	0.002550	0.002510
Diagnostic statistics						
Number of observations						
Panel 1: All industries	2,435,174	2,435,174	1,645,841	1,645,841	789,333	789,333
Panel 2: Manufacturing	429,827	429,827	305,381	305,381	124,446	124,446
Panel 3: Non-manufacturing	1,984,893	1,984,893	1,327,258	1,327,258	657,635	657,635
Age dummies	No	Yes	No	Yes	No	Yes
Provinces	No	Yes	No	Yes	No	Yes

† p<0.10, * p<0.05, ** p<0.01 (two-tailed test)
Notes: The table reads as follows: with controls for age and province, post-displacement paid-employment rates of males laid-off from manufacturing fell by 0.687 percentage points between 1978–1980 and 2005–2007. The dependent variable equals 1 if a laid-off worker has positive T4 earnings in year $t+1$, the year following the layoff; the dependent variable equals 0 otherwise. Apart from a vector of period effects, control variables include dummy variables for single years of age (30 being the omitted age) and province indicators (Ontario being the omitted province). The period covered is 1978–2007. Results are from a linear probability model. The numbers show the parameter estimates for the 2005–2007 period effects. Standard errors are robust.
Source: Authors' calculation from the Longitudinal Worker File.

Table 8
Post-displacement paid-employment rates, 2005-to-2007 versus 1978-to-1980 — Workers aged 25 to 64

	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Panel 1: All industries						
Coefficient	0.012600 **	0.024400 **	-0.009080 **	0.000939	0.090600 **	0.109000 **
Standard error	0.001520	0.001510	0.001700	0.001690	0.003130	0.003100
Panel 2: Manufacturing						
Coefficient	-0.001570	0.014300 **	-0.024500 **	-0.010200 **	0.046100 **	0.063100 **
Standard error	0.003540	0.003500	0.003950	0.003900	0.007070	0.007000
Panel 3: Non-manufacturing						
Coefficient	0.015300 **	0.026300 **	-0.005970 **	0.003150 '	0.101000 **	0.120000 **
Standard error	0.001690	0.001680	0.001890	0.001870	0.003570	0.003520
Diagnostic statistics						
Number of observations						
Panel 1: All industries	1,744,398	1,744,398	1,188,227	1,188,227	556,171	556,171
Panel 2: Manufacturing	309,751	309,751	216,232	216,232	93,519	93,519
Panel 3: Non-manufacturing	1,420,856	1,420,856	963,027	963,027	457,829	457,829
Age dummies	No	Yes	No	Yes	No	Yes
Provinces	No	Yes	No	Yes	No	Yes

† $p<0.10$, * $p<0.05$, ** $p<0.01$ (two-tailed test)

Notes: The table reads as follows: with controls for age and province, post-displacement paid-employment rates of males laid-off from manufacturing fell by 1.02 percentage points between 1978–1980 and 2005–2007. The dependent variable equals *1* if a laid-off worker has positive T4 earnings in year *t+1*, the year following the layoff; the dependent variable equals *0* otherwise. Apart from a vector of period effects, control variables include dummy variables for single years of age (30 being the omitted age) and province indicators (Ontario being the omitted province). The period covered is 1978–2007. Results are from a linear probability model. The numbers show the parameter estimates for the 2005–2007 period effects. Standard errors are robust.

Source: Authors' calculation from the Longitudinal Worker File.

Table 9
Earnings losses of laid-off workers re-employed in year *t+1*, 2005-to-2007 versus 1979-to-1980 — Workers aged 15 to 64

	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Panel 1: All industries						
Coefficient	-0.002180	0.118000 **	0.016300 **	0.126000 **	-0.052400 **	0.108000 **
Standard error	0.004940	0.004830	0.005620	0.005480	0.010400	0.010200
Panel 2: Manufacturing						
Coefficient	-0.162000 **	0.012000	-0.149000 **	0.016500	-0.194000 **	-0.005030
Standard error	0.011600	0.011300	0.013000	0.012700	0.024500	0.024100
Panel 3: Non-manufacturing						
Coefficient	0.023400 **	0.132000 **	0.049700 **	0.146000 **	-0.054900 **	0.105000 **
Standard error	0.005520	0.005380	0.006280	0.006110	0.011600	0.011400
Diagnostic statistics						
Number of observations						
Panel 1: All industries	1,770,712	1,770,712	1,232,479	1,232,479	538,233	538,233
Panel 2: Manufacturing	312,065	312,065	230,596	230,596	81,469	81,469
Panel 3: Non-manufacturing	1,445,310	1,445,310	993,036	993,036	452,274	452,274
Age dummies	No	Yes	No	Yes	No	Yes
Provinces	No	Yes	No	Yes	No	Yes

† p<0.10, * p<0.05, ** p<0.01 (two-tailed test)
Notes: The table reads as follows: with controls for age and province, earnings losses of women laid-off in industries other than manufacturing and re-employed in the following year fell, on average, by 0.105 log points between 1979–1980 and 2005–2007. The dependent variable equals log earnings in year *t+1*, the year following the layoff, minus log earnings in year *t-1*. Apart from a vector of period effects, control variables include dummy variables for single years of age (30 being the omitted age) and province indicators (Ontario being the omitted province). The period covered is 1979–2007. Results are from ordinary least-squares. The numbers show the parameter estimates for the 2005–2007 period effects. Standard errors are robust.
Source: Authors' calculation from the Longitudinal Worker File.

Table 10
Earnings losses of laid-off workers re-employed in year *t+1*, 2005-to-2007 versus 1979-to-1980 — Workers aged 25 to 64

	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Panel 1: All industries						
Coefficient	0.052600 **	0.085100 **	0.063800 **	0.093400 **	0.029100 *	0.075300 **
Standard error	0.005950	0.005940	0.006600	0.006580	0.013700	0.013600
Panel 2: Manufacturing						
Coefficient	-0.093100 **	-0.047800 **	-0.083600 **	-0.041400 **	-0.113000 **	-0.067700 *
Standard error	0.013900	0.013900	0.015600	0.015500	0.029500	0.029300
Panel 3: Non-manufacturing						
Coefficient	0.078000 **	0.108000 **	0.094500 **	0.122000 **	0.029900 †	0.076900 **
Standard error	0.006620	0.006610	0.007310	0.007300	0.015700	0.015700
Diagnostic statistics						
Number of observations						
Panel 1: All industries	1,254,927	1,254,927	884,712	884,712	370,215	370,215
Panel 2: Manufacturing	222,935	222,935	162,416	162,416	60,519	60,519
Panel 3: Non-manufacturing	1,022,979	1,022,979	716,269	716,269	306,710	306,710
Age dummies	No	Yes	No	Yes	No	Yes
Provinces	No	Yes	No	Yes	No	Yes

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-tailed test)

Notes: The table reads as follows: with controls for age and province, earnings losses of women laid-off in industries other than manufacturing and re-employed in the following year fell, on average, by 0.0769 log points between 1979–1980 and 2005–2007. The dependent variable equals log earnings in year *t+1*, the year following the layoff, minus log earnings in year *t-1*. Apart from a vector of period effects, control variables include dummy variables for single years of age (30 being the omitted age) and province indicators (Ontario being the omitted province). The period covered is 1979–2007. Results are from ordinary least-squares. The numbers show the parameter estimates for the 2005–2007 period effects. Standard errors are robust.

Source: Authors' calculation from the Longitudinal Worker File.

Table 11
Median percentage change in earnings of laid-off workers (including those with no wages and salaries in year *t+1*), 2005-to-2007 versus 1979-to-1980 — Workers aged 15 to 64

	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Panel 1: All industries						
Coefficient	0.027200 **	0.125000 **	0.024800 **	0.109000 **	0.067200 **	0.233000 **
Standard error	0.003810	0.002190	0.004530	0.003700	0.008450	0.005530
Panel 2: Manufacturing						
Coefficient	-0.108000 **	0.018000 **	-0.112000 **	0.001970	-0.072000 **	0.066700 **
Standard error	0.009030	0.005150	0.009870	0.007740	0.021400	0.015500
Panel 3: Non-manufacturing						
Coefficient	0.049800 **	0.141000 **	0.053700 **	0.130000 **	0.068300 **	0.245000 **
Standard error	0.004440	0.003160	0.004870	0.004940	0.009250	0.005830
Diagnostic statistics						
Number of observations						
Panel 1: All industries	2,140,569	2,140,569	1,456,166	1,456,166	684,403	684,403
Panel 2: Manufacturing	380,189	380,189	273,055	273,055	107,134	107,134
Panel 3: Non-manufacturing	1,743,948	1,743,948	1,172,432	1,172,432	571,516	571,516
Age dummies	No	Yes	No	Yes	No	Yes
Provinces	No	Yes	No	Yes	No	Yes

† $p<0.10$, * $p<0.05$, ** $p<0.01$ (two-tailed test)

Notes: The table reads as follows: with controls for age and province, median earnings losses of women laid-off in industries other than manufacturing, measured in terms of percentage changes, fell by 24.5 percentage points between 1979–1980 and 2005–2007. The dependent variable is the percentage change in earnings between year *t-1* and year *t+1*, the year following the layoff. Apart from a vector of period effects, control variables include dummy variables for single years of age (30 being the omitted age) and province indicators (Ontario being the omitted province). The period covered is 1979–2007. Results are from median regressions. The numbers show the parameter estimates for the 2005–2007 period effects. Standard errors are robust.

Source: Authors' calculation from the Longitudinal Worker File.

Table 12
Median percentage change in earnings of laid-off workers (including those with no wages and salaries in year *t+1*), 2005-to-2007 versus 1979-to-1980 — Workers aged 25 to 64

	Both Sexes		Men		Women	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variables						
Panel 1: All industries						
Coefficient	0.052300 **	0.086900 **	0.045700 **	0.074600 **	0.157000 **	0.201000 **
Standard error	0.004500	0.000881	0.004960	0.004320	0.010700	0.005860
Panel 2: Manufacturing						
Coefficient	-0.063700 **	-0.023100 **	-0.079000 **	-0.035600 **	-0.023800	0.024400 *
Standard error	0.010400	0.007720	0.011100	0.006450	0.022800	0.011100
Panel 3: Non-manufacturing						
Coefficient	0.075500 **	0.107000 **	0.071300 **	0.099500 **	0.183000 **	0.228000 **
Standard error	0.005140	0.003780	0.005610	0.005240	0.012900	0.006610
Diagnostic statistics						
Number of observations						
Panel 1: All industries	1,561,824	1,561,824	1,070,090	1,070,090	491,734	491,734
Panel 2: Manufacturing	279,565	279,565	197,272	197,272	82,293	82,293
Panel 3: Non-manufacturing	1,270,845	1,270,845	865,360	865,360	405,485	405,485
Age dummies	No	Yes	No	Yes	No	Yes
Provinces	No	Yes	No	Yes	No	Yes

† p<0.10, * p<0.05, ** p<0.01 (two-tailed test)

Notes: The table reads as follows: with controls for age and province, median earnings losses of women laid-off in industries other than manufacturing, measured in terms of percentage changes, fell by 22.8 percentage points between 1979–1980 and 2005–2007. The dependent variable is the percentage change in earnings between year *t-1* and year *t+1*, the year following the layoff. Apart from a vector of period effects, control variables include dummy variables for single years of age (30 being the omitted age) and province indicators (Ontario being the omitted province). The period covered is 1979–2007. Results are from median regressions. The numbers show the parameter estimates for the 2005–2007 period effects. Standard errors are robust.

Source: Authors' calculation from the Longitudinal Worker File.

7.2   Statistics Canada's Longitudinal Worker File

The Longitudinal Worker File is a file produced by the Social Analysis Division of Statistics Canada. It is a 10% random sample of all Canadian workers, constructed by integrating data from four sources: the *Record of Employment* (ROE) files of Human Resources and Skills Development Canada (on worker separations); the T1 (*T1 General: Income Tax and Benefit Return*) and T4 (*Statement of Remuneration Paid*) files of Canada Revenue Agency; and the Longitudinal Employment Analysis Program (LEAP). In its current version, the LWF has a 26-year longitudinal window: it follows individuals over the 1983–2008 period.

The *Employment Insurance Act* and the *Employment Insurance Regulations* require every employer to issue a ROE when an employee working in insurable employment has an interruption in earnings. The information stated on the ROE is used to determine whether a person qualifies for Employment Insurance (EI) benefits, the applicable benefit rate, and the duration of the individual's claim. The ROE must be issued even when the employee does not intend to file a claim for EI benefits. More importantly, the ROE indicates the reason for the work interruption or separation.[30] The ROE can thus be used to identify workers who are laid-off, workers who quit, and workers who separate from their employer for other reasons.

Like most administrative data sets, the LWF contains no information on workers' labour force status, education, occupation, visible-minority status, or immigration status. Hence, it does not allow separate analyses for workers with different education levels, for example. While these limitations should be kept in mind, the fact that the LWF follows a large and nationally representative sample of workers over a substantial period makes it a unique data set for assessing the evolution of job security (or economic insecurity resulting from job loss) over the last decades.

Since the unit of analysis in the LWF is person-jobs observed in a given year, it is possible to determine how many jobs end with a permanent layoff and how many individuals incur at least one permanent layoff in a given year. A permanent layoff occurs when a worker does not return to his or her initial employer in the current year or in the year following the layoff.

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30. A penalty under the *Employment Insurance Act* for non-compliance may apply to employers who fail to issue a ROE. Moreover, employers who enter a false or misleading reason for a separation may be subject to penalty or prosecution.

7.3 Using the 1978-to-1979 Longitudinal Worker File and the 1983-to-2008 Longitudinal Worker File to construct a times series of permanent layoff rates beginning in 1978

There are two versions of the Longitudinal Worker File (LWF): the first version covers the 1978-to-1989 period (LWF7889) while the most recent version covers the 1983-to-2008 period (LWF8308). To construct a time series of permanent layoff rates beginning in 1978, this paper uses both versions. The LWF7889 is used to derive layoff rates from 1978 to 1983, while the LWF8308 is used to derived layoff rates from 1984 to 2007.

Chart 15
Permanent layoff rates of workers aged 15 to 64, LWF7889 versus LWF8308
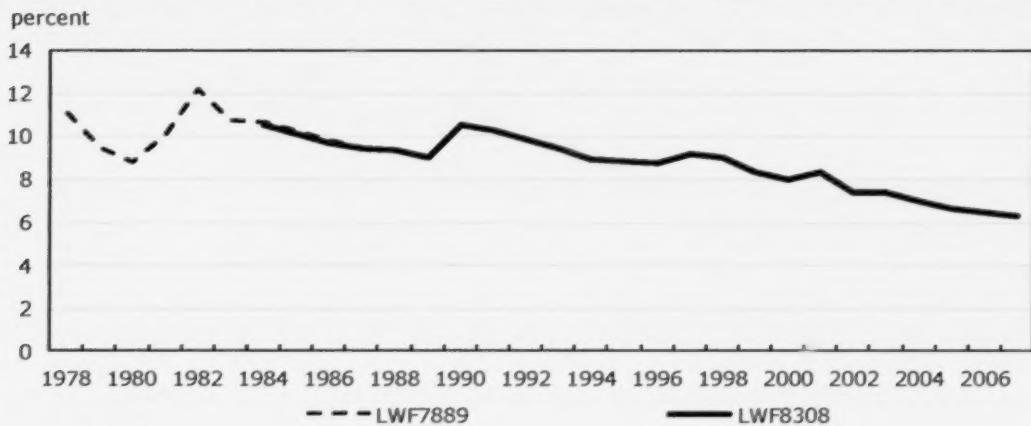
Note: "LWF" stands for "Longitudinal Worker File."

Chart 15 shows permanent layoff rates derived from both versions. The chart shows a slight discrepancy in layoff rates between the two versions during the 1984-to-1988 period. To remove this discrepancy, the 1978-to-1983 layoff rates (obtained from the 1978-to-1989 version) are rescaled by means of information from the 1983-to-2008 version of the LWF.

First, ratios of permanent layoff rates from the two LWF versions are constructed for 1984.[31] Ratios are constructed for each of the 60 groups that are defined by the interaction of the six regions and the ten age groups defined in the main text. For each group, the following ratios are obtained:

$$RATIO_i = \frac{LR_{i1984}^{8308}}{LR_{i1984}^{7889}} \qquad i = 1,2,3,...,60$$

where the numerator (denominator) on the right-hand side captures permanent layoff rates in 1984, as measured from the 1983-to-2008 (1978-to-1989) version of the LWF.

Second, for each year of the 1978-to-1983 period, these 60 ratios are applied to the group-specific layoff rates obtained from the 1978-to-1989 LWF. The final group-specific layoff rates for the 1978-to-1983 period are obtained by multiplying the aforementioned ratios by the group-specific layoff rates obtained from the 1978-to-1989 LWF. These group-specific layoff rates are

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31. The year 1984 is selected because it is the first year following the 1978-to-1983 period.

subsequently aggregated in order to yield an overall permanent layoff rate for a given year.[32] All permanent layoff rates presented in Charts 2, 3, and 4, Chart 5, and Charts 6, 7, and 8, as well as all underlying regression results presented in Table 1 and Tables 5 and 6 in Appendix Subsection 7.1 are based on these calculations.[33]

7.4 Evolution of earnings losses in manufacturing

Table 13
Median percentage changes in earnings of displaced manufacturing workers aged 25 to 54, by industry, 1999-to-2000 versus 2006-to-2007

	Men			Women		
	1999-to-2000	2006-to-2007	Change	1999-to-2000	2006-to-2007	Change
	percent					
Manufacturing	-7.5	-19.6	-12.1	-16.5	-35.9	-19.4
Food	-6.2	-14.6	-8.3	-10.8	-8.3	2.5
Beverage and tobacco products	-7.2	-14.6	-7.4	-6.3	-38.3	-32.0
Textile mills	-41.1	-52.5	-11.4	-34.1		
Textile-product mills	-46.4	-38.1	8.3	-10.9	-74.1	-63.2
Clothing	-27.1	-61.5	-34.4	-22.3	-56.3	-33.9
Leather and allied products	-1.4			-27.0		
Wood products	-9.6	-23.7	-14.1	-17.0	-29.7	-12.7
Paper	-14.5	-28.3	-13.8	-29.4	-48.0	-18.6
Printing and related support activities	-22.7	-25.1	-2.4	-18.7	-41.0	-22.2
Petroleum and coal products						
Chemical	-16.7	-18.2	-1.5	-16.1	-42.0	-25.9
Plastics and rubber products	-8.3	-34.3	-26.0	-16.3	-49.4	-33.1
Non-metallic mineral products	-5.2	-4.6	0.5	-13.7	-31.1	-17.4
Primary metals	-25.5	-32.1	-6.5		-45.2	
Fabricated metal products	1.9	-2.6	-4.4	-11.7	-27.3	-15.6
Machinery	-7.1	-18.3	-11.2	-0.9	-29.3	-28.4
Computer and electronic products	-10.4	-18.3	-7.8	-15.0	-38.3	-23.3
Electrical equipment, appliances, and components	2.8	-6.8	-9.6	-24.4	-44.6	-20.3
Transportation equipment	-8.1	-40.6	-32.4	-26.7	-53.8	-27.1
Furniture and related products	-10.6	-25.9	-15.3	-19.4	-33.0	-13.6
Miscellaneous	-12.9	-10.2	2.7	-13.7	-23.8	-10.1

Notes: The sample includes workers with zero T4 earnings in year *t+1*, the year following the layoff. Cells have been left blank when sample sizes are lower than 50.
Source: Authors' calculations from the Longitudinal Worker File.

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32. The overall permanent layoff rate is a weighted average of group-specific permanent layoff rates, where the weights used for a given group equal the proportion of total paid employment accounted for by that group. Note that, when workers aged 25 to 64 (25 to 54) are considered, the number of groups and ratios used equals 48 (36), i.e., eight (six) age groups times six regions.
33. The procedure described above is applied separately for each industry-gender-sample combination, thereby leading to the construction of 27 sets of ratios (i.e., three industry definitions times three gender combinations times three samples).

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